WHAT IS CLAIMED IS:

1. Method for the transmission of a first digital signal (DS1) from a first location (FL) over a transport channel (TC) to one or more second locations (SL) where it is received as a second digital signal (DS2) which is substantially equal to the first digital signal (DS1), whereby a sample (S1) of the first digital signal (DS1) represented by M bits, being the total of N most significant bits (MSB) and M-N least significant bits (LSB), is transported over the transport channel (TC) as a transport sample comprising at least two parts, of which

one part is a compressed transport sample (CTS) represented by N-C bits, N being smaller than M and C being smaller than N and larger than 0, the N-C bits being obtained through predictive coding of the N most significant bits of the sample (S1) of the first digital signal (DS1), whereby to each sample (S1) of the first digital signal (DS1) corresponds at least a prediction ($\hat{x}_{enc}$) representing the predicted N most significant bits of the sample (S1) of the first digital signal (DS1) whereby the prediction is based on previously compressed samples, a prediction error (e_{enc}) representing the difference between the N most significant bits of the sample (S1) of the first digital signal (DS1) and the said prediction ($\hat{x}_{enc}$), and a clipping error representing the difference between the prediction error (e_{enc}) and a clipped prediction error ($(e_{enc})_c$) which is the prediction error (e_{enc}) clipped by a first clipper (PEC1) to a clip range represented as [A..B] by means of N-C bits, A and B being integers and B-A being equal to or smaller than $2^{(N-C)}-1$, and

the other part is a residual transport sample (RTS) represented by M-N bits, characterized in that the said residual transport sample (RTS) is either equal to the M-N least significant bits (LSB) of the said sample (S1) of the first digital signal (DS1) in the case that the prediction error (e_{enc}) corresponding to the said sample (S1) of the first digital signal (DS1) is in the range [A..B], or, in the other case, the P least significant bits of the M-N LSB's are equal to a substitution value (CE) which is a quantisation function of the absolute clipping error corresponding to the said sample (S1) of the first digital signal (DS1), whereby the number of output levels of the said quantisation function of the

absolute clipping error is equal to or less than 2^P, whereby P is equal to or less than M-N and whereby the other M-N-P bits of the M-N bits of the RTS are equal to the M-N-P most significant bits of the M-N LSB's of the said sample (S1) of the first digital signal (DS1).

2. Method according to claim 1, wherein the compressed transport sample (CTS) is the clipped prediction error ($(e_{enc})_c$).

3. Method according to claim 1, wherein the compressed transport sample (CTS) is an in the range [A..B] wrapped around sum of the clipped prediction error ($(e_{enc})_c$) and a mapped value ($m(\hat{x}_{enc})$) of the prediction ($\hat{x}_{enc}$), and that the said mapped value ($m(\hat{x}_{enc})$) of the prediction ($\hat{x}_{enc}$) is the prediction ($\hat{x}_{enc}$) mapped on a range [D..E], E and D being integers and E-D being equal to or smaller than $2^{(N-C)}-1$.

4. Method according to claim 3, wherein the prediction ($\hat{x}_{enc}$) is mapped or quantized in a non-uniform way, such that the quantization is fine for prediction values corresponding to small input amplitudes and rough for prediction values corresponding to big amplitudes of the first digital signal.

5. Method for the transmission of a first digital signal (DS1) from a first location (FL) over a transport channel (TC) to one or more second locations (SL) where it is received as a second digital signal (DS2) which is substantially equal to the first digital signal (DS1), whereby a sample (S1) of the first digital signal (DS1) represented by N bits, is transported over the transport channel (TC) as a transport sample represented by N-C bits, C being smaller than N and larger than 0, the N-C bits being obtained through predictive coding of the N bits of the sample (S1) of the first digital signal (DS1), whereby with each sample of the first digital signal (DS1) corresponds at least a prediction ($\hat{x}_{enc}$) representing the predicted N bits of the sample (S1) of the first digital signal (DS1), whereby the prediction is based on previously compressed samples, and a prediction error (e_{enc}) representing the difference between the N bits of the sample (S1) of the first digital signal (DS1) and the said prediction ($\hat{x}_{enc}$), characterized in that the transport sample is an in the range [A..B] wrapped around sum of the prediction error (e_{enc}) clipped to a fixed range named clip range [A..B], A and B being integers and B-A being equal

to or smaller than $2^{(N-C)}-1$, and a mapped value $(m(\hat{x}_{enc}))$ of the prediction $(\hat{x}_{enc})$ which has been mapped on a range [D..E], E and D being integers and E-D being equal to or smaller than $2^{(N-C)}-1$.

6. Method according to claim 5, wherein the prediction $(\hat{x}_{enc})$ is mapped or quantized in a non-uniform way, such that the quantization is fine for prediction values corresponding to small input amplitudes and rough for prediction values corresponding to big amplitudes of the first digital signal.

7. Method for the transmission of a first digital signal (DS1) from a first location (FL) over a transport channel (TC) to one or more second locations (SL) where it is received as a second digital signal (DS2) which is substantially equal to the first digital signal (DS1), whereby a sample (S1) of the first digital signal (DS1), represented by N bits, is transported over the transport channel (TC) as a transport sample represented by N-C bits, C being smaller than N and larger than 0, the N-C bits being obtained through predictive coding of the N bits of the sample (S1) of the first digital signal (DS1), whereby with each sample (S1) of the first digital signal (DS1) corresponds at least a prediction $(\hat{x}_{enc})$ representing the predicted N bits of the sample (S1) of the first digital signal (DS1), whereby the prediction $(\hat{x}_{enc})$ is based on previously compressed samples, and a prediction error (e_{enc}) representing the difference between the N bits of the sample (S1) of the first digital signal (DS1) and the said prediction $(\hat{x}_{enc})$, and whereby the transport sample is the prediction error (e_{enc}) clipped to a range named clip range, which can be represented by means of N-C bits, wherein the clip range is shiftable in the said sample in function of one or more actual parameters of the said sample in the first digital signal.

8. Method according to claim 7, whereby the first digital signal (DS1) is a digitized television IF signal with an IF carrier and featuring as parameters at least an estimated luminance and an estimated IF carrier phase, the second digital signal (DS2) consequently also being a digitized television IF signal, wherein:

the clip range [A..B] is shifted over a shift (sh) to $[A+sh..B+sh]$, whereby the shift (sh) for a sample is determined by the estimated luminance and/or by the estimated IF carrier phase in that sample,

the absolute amount of the shift (sh) is proportional to the absolute value of the amplitude of the estimated IF carrier,

for a television IF signal with negative modulation, either the shift (sh) is negative in case of a positive peak of the estimated IF carrier and a low luminance, and in case of a negative peak of the estimated IF carrier and a high luminance, or the shift (sh) is positive in case of a negative peak of the estimated IF carrier and a low luminance, and in case of a positive peak of the estimated IF carrier and a high luminance,

for a television IF signal with positive modulation, either the shift (sh) is positive in case of a positive peak of the estimated IF carrier and a low luminance, and in case of a negative peak of the estimated IF carrier and a high luminance, or the shift (sh) is negative in case of a negative peak of the estimated IF carrier and a low luminance, and in case of a positive peak of the estimated IF carrier and a high luminance.

9. Method for making the same estimation of the IF carrier of a sampled IF signal in a receiver comprising a decoder and in a transmitter comprising an encoder which includes a local decoder, characterized in that in both the transmitter and the receiver, the output of the decoder or the output of the local decoder in the encoder is first band-pass filtered and then, the output of the band-pass filter is the input of a phase-locked loop which tracks the phase of the IF carrier.

10. Method for making the same estimation of the luminance of an IF signal in a receiver comprising a decoder and in a transmitter comprising an encoder which includes a local decoder, characterized in that first the IF carrier is estimated at both encoder and decoder, that then in both the transmitter and receiver the estimated IF carrier is multiplied with the band-pass filtered output of the local decoder in the encoder or with the band-pass filtered output of the decoder, and that finally the multiplier result is low-pass filtered in both transmitter and receiver.

11. Method according to claim 8, wherein the compressed transport sample (CTS) is an in ~~the range~~ [A..B] wrapped around sum of the clipped prediction error ($(e_{enc})_c$) and a mapped value $m(y)$ with y being either the prediction $\hat{x}_{enc}$ or the sum of the prediction $\hat{x}_{enc}$ and the shift sh, and that the said mapped value

$m(y)$ is in a range [D..E], E and D being integers and E-D being equal to or smaller than $2^{(N-C)}-1$, , the mapping being either a uniform or a non-uniform mapping, the non-uniform mapping being such that the quantization is fine for prediction values corresponding to small input amplitudes and rough for prediction values corresponding to big amplitudes of the first digital signal.

12. Method according to claim 1, whereby the first digital signal (DS1) is a digitized television IF signal with an IF carrier and featuring as parameters at least an estimated luminance and an estimated IF carrier phase, the second digital signal (DS2) consequently also being a digitized television IF signal, wherein:

the clip range [A..B] is shifted over a shift (sh) to [A+sh..B+sh], whereby the shift (sh) for a sample is determined by the estimated luminance and/or by the estimated IF carrier phase in that sample,

the absolute amount of the shift (sh) is proportional to the absolute value of the amplitude of the estimated IF carrier,

for a television IF signal with negative modulation, either the shift (sh) is negative in case of a positive peak of the estimated IF carrier and a low luminance, and in case of a negative peak of the estimated IF carrier and a high luminance, or the shift (sh) is positive in case of a negative peak of the estimated IF carrier and a low luminance, and in case of a positive peak of the estimated IF carrier and a high luminance,

for a television IF signal with positive modulation, either the shift (sh) is positive in case of a positive peak of the estimated IF carrier and a low luminance, and in case of a negative peak of the estimated IF carrier and a high luminance, or the shift (sh) is negative in case of a negative peak of the estimated IF carrier and a low luminance, and in case of a positive peak of the estimated IF carrier and a high luminance.

13. Method according to claim 12, wherein the compressed transport sample (CTS) is in the range [A..B] wrapped around sum of the clipped prediction error $((e_{enc})_c)$ and a mapped value $m(y)$ with y being either the prediction $\hat{x}_{enc}$ or the sum of the prediction $\hat{x}_{enc}$ and the shift sh, and that the said mapped value $m(y)$ is in a range [D..E], E and D being integers and E-D being equal to or smaller than $2^{(N-C)}-1$, , the mapping being either a uniform or a

non-uniform mapping, the non-uniform mapping being such that the quantization is fine for prediction values corresponding to small input amplitudes and rough for prediction values corresponding to big amplitudes of the first digital signal.

14. Transmitting apparatus wherein a digitized television IF signal is transformed into a transport channel bit-stream (TCBS) for transmission of the said digitized television IF signal from a first location (FL) to one or more second locations (SL), comprising:

a splitter (SP) for splitting a sample (S1) of the said digitized television IF signal into N most significant bits (MSB) and M-N least significant bits (LSB).

an encoder DPCM-core (D1) for compression of the N most significant bits (MSC) of a sample (S1) into a N-C bit compressed transport sample (CTS), generating a clipped prediction error $((e_{enc})_c)$.

an output for the transport channel bit-stream (TCBS).

a first location clipping detector (BSC1 or BSC12) which generates a first location PCM-bit substitution control signal (SC1) indicating what is to be transmitted as residual transport sample (RTS), either the M-N least significant bits (LSB) of the sample S1 of the first digitized television IF signal, or a substitution value (CE) being a first function of both the clipping error corresponding to the said sample S1 of the first digitized television IF signal, and the M-N ISB's of the said sample S1 of the first digitized television IF signal, and

the first location substitutor (BS1) which substitutes the M-N least significant bits (LSB) by a substitution value (CE), depending on the value of the first location PCM-bit substitution control signal (SC1).

15. Transmitting apparatus according to claim 14, further comprising:

a prediction mapper (PM1) for generating a mapped prediction $m(\hat{X}_{enc})$ from an encoder prediction ($\hat{X}_{enc}$) from the encoder CPCM-core (D1), and

an adder (ADD12) which adds the mapped prediction ($m(\hat{X}_{enc})$) and the clipped prediction error $((e_{enc})_c)$, and then wraps around the result of the addition, thus obtaining a compressed transport sample

(CTS), and wherein the transmitting apparatus includes at least one of (A) and (B):

(A) the encoder DPCM-core (D1) comprises means to clip the prediction errors to a range equal to or smaller than $2^{(N-C)}-1$, and

(B) the prediction mapper (PM1) comprises means for a uniform or a non-uniform mapping.

16. Transmitting apparatus wherein a digitized television IF signal is transformed into a transport channel bit-stream (TCBS) for transmission of the said digitized television IF signal from a first location (FL) to one or more second locations (SL), comprising:

an encoder DPCM-core (D1) for compression of a sample S1 of the first digitized television IF signal, represented by N bits, into a N-C-bit compressed transport sample (CTS), generating a prediction ($\hat{x}_{enc}$) and a clipped prediction error ($(e_{enc})_c$),

an output for the transport channel bit-stream (TCBS),

a prediction mapper (PM1) for generating a mapped prediction ($m(\hat{x}_{enc})$) from the prediction ($\hat{x}_{enc}$) from the encoder DPCM-core (D1), and

an adder (ADD12) which adds the mapped prediction ($m(\hat{x}_{enc})$) and the clipped prediction error ($(e_{enc})_c$), and then wraps around the result of the addition, thus obtaining a compressed transport sample (CTS), and wherein the transmitting apparatus includes at least one of (A) and (B):

(A) the encoder DPCM-core (D1) comprises means to clip the prediction errors to a range equal to or smaller than $2^{(N-C)}-1$, and

(B) the prediction mapper (PM1) comprises means for a uniform or a non-uniform mapping.

17. Transmitting apparatus according to claim 14, further comprising:

a phase-locked loop (PLL1) which estimates the phase (Φ_{enc}) of the IF carrier of the digitized television IF signal, based on a locally decoded television IF signal ($\tilde{x}_{enc}$) from the encoder DPCM-core (D1),

a luminance estimator (LUE1) which estimates the luminance of the video signal contained in the digitized television IF signal, based on the decoded television IF signal ($\tilde{x}_{enc}$) and on the estimated phase (Φ_{enc}) of the IF carrier, resulting in an estimated luminance (L_{enc}), and

a shift estimator (SHE1) which estimates a shift (sh_{enc}), based on the estimated phase (Φ_{enc}) of the IF carrier and on the estimated luminance (L_{enc}),

wherein the encoder DPCM-core comprises means to clip the prediction error (e_{enc}) to a range which is shifted over a shift (sh_{enc}).

18. Transmitting apparatus wherein a digitized television IF signal is transformed into a transport channel bit-stream (TCBS) for transmission of the said digitized television IF signal from a first location (FL) to one or more second locations (SL), comprising:

an encoder DPCM-core (D1) for compression of a sample (S1) of the first digitized television IF signal, represented by N bits, into a N-C-bit compressed transport sample (CTS), generating a prediction ($\hat{x}_{enc}$) and a clipped prediction error ($(e_{enc})_c$),

an output for the transport channel bit-stream (TCBS),

a phase-locked loop (PLL1) which estimates the phase (Φ_{enc}) of the IF carrier of the digitized television IF signal, based on a locally decoded television IF signal ($\tilde{x}_{enc}$) from the encoder DPCM-core (D1),

a luminance estimator (LUE1) which estimates the luminance of the video signal contained in the digitized television IF signal, based on the decoded television IF signal ($\tilde{x}_{enc}$) and on the estimated phase (Φ_{enc}) of the IF carrier, resulting in an estimated luminance (L_{enc}), and

a shift estimator (SHE1) which estimates a shift (sh_{enc}), based on the estimated phase (Φ_{enc}) of the IF carrier and on the estimated luminance (L_{enc}),

wherein the encoder DPCM-core comprises means to clip the prediction error (e_{enc}) to a range which is shifted over a shift (sh_{enc}).

19. Transmitting apparatus according to claim 18, further comprising:

a prediction mapper (PM1) for generating a mapped value $m(y)$ of either the encoder prediction $y = \hat{x}_{enc}$ from the encoder DPCM-core (D1) or the sum $y = \hat{x}_{enc} + sh$ of the encoder prediction $\hat{x}_{enc}$ and the clip range shift sh, and

an adder (ADD12) which adds the mapped value ($m(y)$) and the clipped prediction error $((e_{ENC})_c)$ and then wraps around the result of the addition, thus obtaining a compressed transport sample (CTS), and wherein the transmitting apparatus includes at least one of (A) and (B):

(A) the encoder DPCM-core (D1) comprises means to clip the prediction errors to a range equal to or smaller than $2^{(N-C)}-1$, and

(B) the prediction mapper (PM1) comprises means for a uniform or non-uniform mapping.

20. Transmitting apparatus according to claim 17, further comprising:

a prediction mapper (PM1) for generating a mapped value $m(y)$ of either the encoder prediction $y=\hat{x}_{ENC}$ from the encoder DPCM-core (D1) or the sum $y=\hat{x}_{ENC}+sh$ of the encoder prediction $\hat{x}_{ENC}$ and the clip range shift *sh*, and

an adder (ADD12) which adds the mapped value ($m(y)$) and the clipped prediction error $(e_{ENC})_c$, and then wraps around the result of the addition, thus obtaining a compressed transport sample (CTS), and the transmitting apparatus includes at least one of (A) and (B):

(A) the encoder DPCM-core (D1) comprises means to clip the prediction errors to a range equal to or smaller than $2^{(N-C)}-1$, and

(B) the prediction mapper (PM1) comprises means for a uniform or non-uniform mapping.

21. Receiving apparatus wherein a transport channel bit-stream (TCBS), which contains a first digitized television IF signal represented by transport samples composed of at least a N-C-bits compressed transport sample (CTS) and a (M-N)-bits residual transport sample (RTS) and which is either obtained through compression or is transmitted, is transformed into a second digitized television IF signal, comprising:

an input for the transport channel bit-stream (TCBS).

a decoder DPCM-core (D2) for decompressing the N-C bits of a compressed transport sample (CTS) to N MSB's of an output sample (S2),

a combiner (CB) for combining the M-N LSB's and N MSB's of a sample to an output sample (S2).

a second location clipping detector 9BSC2) which generates a second location PCM-bit substitution control signal (SC2),

indicating what is to be selected as M-N least significant bits of the output sample (S2), and a sign signal (SGN), being the sign bit of the transmitted transformed clipping error,

a second location substitutor (BS2) which switches between the received m-N LSB's from the residual transport sample (RTS) and a replacement according to the second location PCM-bit substitution control signal (SC2), and

an MSB corrector (COR) which adds to or subtracts from the result of adder ADD21 in the decoder DPCM-core (D2) and the output value of mapping the received transport sample (RTS) by mans of a second function, according to the second location PCM-bit substitution control signal (SC2) and the sign signal (SGN).

22. Receiving apparatus according to claim 21 further comprising:

a prediction mapper (PM2) for generating a mapped prediction $(m(\hat{x}_{dec}))$ from a decoder prediction $(\hat{X}_{dec})$ from the decoder DPCN-core (D2), whereby the prediction mapper (PM2) comprises means for one or a uniform mapping and a non-uniform mapping, and

a subtractor (SUB21) which subtracts the mapped prediction $(m(\hat{x}_{dec}))$ from the sample of the compressed transport stream (CTS) and which then does a wrap-around of the result of the subtraction, obtaining to a clipped prediction error $((e_{dec})_c)$.

23. Receiving apparatus wherein a transport channel bit-stream (TCBS), containing a first digitized television IF signal represented by transport samples composed of at least a (N-C)-bits compressed transport sample (CTS) and either being compressed or transmitted, is transformed into a second digitized television IF signal, comprising.

an input for the transport channel bit-stream (TCBS),

a decoder CPCM-core (D2) for decompressing the N-C bits of a compressed transport sample (CTS) to N bits of an output sample (S2),

a prediction mapper (PM2) for generating a mapped prediction $(m(\hat{x}_{dec}))$ from a decoder prediction (X_{dec}) from the decoder DPCM-core (D2), whereby the prediction mapper (PM2) comprises means for one of a uniform mapping and a non-uniform mapping, and

a subtractor (SUB21) which subtracts the mapped prediction $(m(\hat{x}_{dec}))$ from the sample of the compressed transport stream (CTS) and which then does a wrap-around of the result of the subtraction, obtaining to a clipped prediction

error$((e_{dec})_c)$.

24. Receiving apparatus according to claim 21 further comprising:

a phase-locked loop (PLL2) which estimates a phase (ϕ_{dec}) of the IF carrier based on a decoded television IF signal ($\tilde{X}_{dec}$) from the decoder DPCM-core (D2),

a luminance estimator (LUE2) which estimates the luminance of the video signal contained in the television IF signal based on the decoded television IF signal ($\tilde{X}_{dec}$) and on the said estimated phase (ϕ_{dec}) of the IF carrier, resulting in an estimated luminance (L_{dec}), and

a shift estimator (SHE2) which estimates the amount of shift (sh_{dec}) based on the said estimated phase (ϕ *dec*) of the IF carrier and on the said estimated luminance (L_{dec}), and

wherein said decoder CPCM-core (D2) comprises means to decode prediction errors which have been clipped in the encoder at the corresponding transmitting apparatus to a clip range which has been shifted there by an amount indicated by a shift estimator (SHE1).

25. Receiving apparatus wherein a transport channel bit-stream (TCBS), containing a first digitized television IP signal represented by transport samples composed of at least a (N-C)-bits compressed transport sample (CTS) and either being compressed or transmitted, is transformed into a second digitized television IF signal, comprising,

an input for the transport channel bit-stream (TCBS),

a decoder DPCM-core (D2) for decompressing the N-C bits of a sample of the compressed transport stream (CTS) to N bits of an output sample (S2),

a phase-locked loop (FLL2) which estimates a phase (ϕ_{dec}) of the IF carrier based on a decoded television IF signal ($\tilde{X}_{dec}$) from the decoder DPCM-core (D2),

a luminance estimator (LUE2) which estimates the luminance of the video signal contained in the television IF signal based on the decoded television IF signal ($\tilde{X}_{dec}$) and on the said estimated phase (ϕ_{dec}) of the IP carrier, resulting in an estimated luminance (L_{dec}), and

a shift estimator (SHE2) which estimates the amount of shift (sh_{dec}) based on the said estimated phase (ϕ_{dec}) of the IF carrier and on the said estimated luminance (L_{dec}),

wherein said decoder CPCM-core (D2) comprises means to decode prediction errors which have been clipped in the encoder at the corresponding transmitting apparatus to a clip range which has been shifted there by an amount indicated by a shift estimator (SHE1).

26. Receiving apparatus according to claim 25, further comprising:

a prediction mapper (PM2) for generating a mapped value ($m(y)$) from the decoder prediction $y = \hat{X}_{dec}$ or the sum $y = \hat{X}_{dec} + sh$ of decoder prediction $\hat{X}_{dec}$ from the decoder CPCM-core (D2) and the shift amount sh, whereby the prediction mapper (PM2) comprises means for one of a uniform mapping and a non-uniform mapping, and

a subtractor (SUB21) which subtracts the mapped value ($m(y)$) from the sample of the compressed transport stream (CTS) and which then does a wrap-around of the result of the subtraction, obtaining so a clipped prediction error $((e_{dec})_c)$.

27. Receiving apparatus according to claim 24, further comprising:

a prediction mapper (PM2) for generating a mapped value ($m(y)$) from one of the decoder prediction $y = \hat{X}_{dec}$ and the sum $y = \hat{X}_{dec} + sh$ of decoder prediction . ${}_{dec}$ from the decoder CPCM-core (D2) and the shift amount sh, whereby the prediction mapper (PM2) comprises means for one of a uniform mapping and a non-uniform mapping, and

a subtractor (SUB21) which subtracts the mapped value ($m(y)$) from the sample of the compressed transport stream (CTS) and which then does a wrap-around of the result of the subtraction, obtaining so a clipped prediction error $((e_{dec})_c)$.